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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,249	06/28/2001	Shiyou Pei	CT-M158 US	9186

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EXAMINER	
RAMSEY, KENNETH J	
ART UNIT	**PAPER NUMBER**
2879	

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/896,249	PEI ET AL.	
	Examiner	Art Unit	
	Kenneth J. Ramsey	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *49-60* is/are allowed.

6)☒ Claim(s) *1-16 and 23-48* is/are rejected.

7)☒ Claim(s) *17-23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 10-16, 23-25, 27, and 29-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho in view of Konuma and Rakhimov. Cho discloses a flat panel display comprising an active area and an auxiliary compartment which houses a getter. The device can be a field emission display (column 1, lines 65-66) or a plasma display (column 25, lines 13-38). In a field emission display the gas pressure within the device is typically 10^{-2} torr or less (column 6, lines 31-36) and in a plasma display the gas pressure is at least 1 torr, typically 5 torr to 0.5 atmosphere (column 25, lines 26-28). Cho discloses that the inert gas of a plasma display is typically xenon, neon, helium, krypton, and/or argon (column 25, lines 25-26), but Cho does not disclose the type of gas found in a field emission display. For purposes of this rejection, the disclosure of a field emission type display as taught at Cho, columns 9-10, column 6, lines 32-33 and column 12, lines 47-49, is primarily relied upon. In this embodiment a field emission display having a high vacuum of 10^{-2} torr, typically 10^{-6} torr, is provided however, the composition of the gases is not disclosed. Also, it is clearly taught that a field emission display comprises an backplate having array of laterally separated electron emissive regions and faceplate having a 1 to 1 corresponding array of phosphor regions that emit light in response to bombardment by electrons to form a

display. Moreover, the face plate and backplate are sealed together to form a hermetically sealed device. As shown by Konuma, it is inherent that the residual gases include argon, helium, and other inert gases that are typically present in the atmosphere since these gases are difficult to remove, even by gettering. As to claim 13, the auxiliary chamber of Cho is readable as a source of further gas since as gas is sorbed by the cathodes during operation the gas in the auxiliary chamber inherently flows into the main chamber until the pressure is balanced. Also in view of the teaching of Cho and Konuma that the getter of a sealed display typically removes the more active contaminant gases that are released from the cathodes due to ion bombardment of the cathode during device operation, thus providing a cleaning function, the only possible difference between Cho and the claimed invention that is of any significance is the pressure level of the residual inert gases. It is important to note herein that 10^{-2} torr is included in the definition of a high vacuum by Cho. 10^{-2} torr is a higher pressure than the minimum pressure levels required by claims 1, 13, 31, and 39. Although Cho states that the pressure level of the high vacuum is typically 10^{-6} torr, the disclosure of Rakhimov, column 3, lines 21-25, column 3, line 64 through column 4, line 10 and column 4, lines 35-38, teaches a field emission display having partial pressures of helium and argon that are much higher, e.g. in the plasma display device range. The difference between the typical field emission display of Cho and that of a field emission display having a higher gas pressure is that the cathodes must be more resistant to damage by sputtering caused by ion bombardment. See Rakhimov, column 2, lines 53-59. Thus, when the emitters are chosen to be of a material more resistant to ion

bombardment makes it clearly obvious that pressures in the higher range are permissible in a field emission display of the flat panel type as long as an emitter that is resistant to ion bombardment is selected. The ability to employ higher pressures in a field emission type device as taught by Rakhimov allows for a lighter construction since allowance for high vacuum loads is not required. Therefore, the specific choice of an emitter material resistant to ion bombardment, and a suitable final partial pressure of the helium and argon corresponding to the partial pressures herein claimed, would have involved an obvious optimization of the Cho device base upon the specific requirements of the designer since the pressures are within the range taught by Cho and Rakhimov. See Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); and In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). As to claims 10 and 39, the main chamber is read as the open space and the auxiliary chamber is read as the inert gas supply. As to claim 43, it is clear that the supply of inert gas in the auxiliary chamber compensates for any gas ions that lodge in the electron-emitting device to maintain the gas pressure. As to Claims 11, etc, these claims differ from the above portion of Cho relied upon the above rejection by the recitation of a specific gas and gas pressure range, e.g., 10^{-1} torr, or lower. As noted

in column 6, lines 31-36 of Cho, the gas pressure in a field emission display is typically 10^{-2} torr or less. Thus these claims too are obvious.

Claims 9 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace 5,520,563 in view of Cho, Konuma and Rakhimov. These claims specify a location of the getter which is different from Cho. Wallace teaches a field emission device which provides the getter location corresponding to that claim for the purpose of gettering contaminants as they are released into the open space during operation of the display. As shown by Konuma, a major reason for release of contaminants is the ion bombardment of the cathodes due to ionization of the residual helium or argon gas in the display. While Konuma and Wallace specify a lower residual pressure than that claimed, Cho and Rakhimov indicate that the residual pressure may be higher provided that emitters more resistant to ion bombardment are chosen. Therefore, the specific choice of a emitter material, and a suitable final partial pressure of the helium and argon corresponding to the partial pressures herein claimed, would have involved an obvious optimization of the Cho device base upon the specific requirements of the designer since the pressures are within the range taught by Cho. See Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); and In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be

unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.).

Allowable Subject Matter

Claims 49-60 are allowed; and, claims 17-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach or suggest the invention as claimed including providing the reservoir of inert gas comprises a container that has wall through which the inert gas passes (claim 17) or a inert-gas compound (claim 22).

Response to Arguments

Applicant's arguments filed October 21, 2003, have been fully considered but they are not persuasive.

At the paragraph at the bottom of page 16 or the remarks, applicant argues that Cho specifies a high vacuum for his field emission type flat CRT display and nowhere indicates or suggests a partial pressure of $5x\ 10^{-7}$ torr or more. In fact, Cho defines a high vacuum as less than 10^{-2} torr, typically 10^{-6} torr, each of which are more than $5x10^{-7}$ torr.

Applicant's argument that Konuma is not relevant to Cho because the gas cleaning in Konuma is prior to sealing is not well taken. Konuma clearly teaches that the residual gases in the sealed devices of the primary references would comprise argon, helium etc. and also teaches that these are the preferred gases for gas cleaning. Applicant has not shown why Konuma would not have taught one of ordinary skill in the

art that the cleaning steps that take place after sealing in the primary references would have involved the same residual gases.

Applicants arguments that Konuma and Rakhimov are each directed to field emission devices that employ only one cathode and thus are not relevant to the field emission flat panel type CRT having an array of laterally separated cathodes as taught by Cho is also not well taken. Each of Konuma and Rakhimov are indicative of the fact that the reason for degradation of the cathodes in a field emission type display is due to erosive damage caused by ion beam sputtering of the of the cathodes as well as to contamination by harmful gases. Thus those of ordinary skill in the art would have recognized that devices having cathodes that are more resistant to ion sputtering do not require the low partial pressures for the inert gases vacuum typical in most flat panel displays. Thus in view of Konuma and Rakhimov, it would have been obvious to one of ordinary skill in the art to employ higher partial pressures of the inert gases for their cleaning function when the cathode material is selected to be more sputter resistant.

Furthermore, in regard to the previous argument, it is important to note that Konuma states that his gas cleaning process can be applied to flat panel CRTs that would have an array of laterally separated cathodes as well as to a CRT having only one cathode (or three cathodes as in the standard colored CRT). While the very high vacuum taught in Konuma for an old fashion CRT is in contrast to the vacuum pressures recited in the claims, the examiner notes that vacuum pressures in a flat panel display may be higher than those in the old fashion CRTs for two basic reasons: 1) there is a shorter distance between the cathode and anode in a flat panel display and

hence less chance of an electron striking a residual gas molecule and 2) since there are many more cathodes in a flat panel display, each cathode has a much shorter duty cycle compared with the cathodes of an old fashion CRT and thus is subjected to less ion bombardment. As to the later reason, an old fashion CRT comprises at most 3 cathodes but a flat panel CRT has a one to one correspondence between each pixel and a corresponding cathode, i.e., in the order of a million cathodes.

Action Made Final

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Directions for Responses

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Ramsey whose telephone number is (703-

308-2324 (571-272-2462 after January 14, 2004). The examiner can normally be reached on M-F from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on 703-305-4794 (571-272-2462 after January 14, 2004). The fax phone number for the organization where this application or proceeding is assigned will remain (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.

Kenneth J. Ramsey
Primary Examiner
Art Unit 2879

KJR